

2.3 Practice A

In Exercises 1–6, use the Distance Formula to write an equation of the parabola.

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|--|---|---|
| 1. focus: $(0, 2)$
directrix: $y = -2$ | 2. focus: $(0, -3)$
directrix: $y = 3$ | 3. focus: $(0, -6)$
directrix: $y = 6$ |
| 4. vertex: $(0, 0)$
directrix: $y = 4$ | 5. vertex: $(0, 0)$
focus: $(0, -1)$ | 6. vertex: $(0, 0)$
directrix: $y = 2$ |
| 7. Which of the given characteristics describe parabolas that open up? Explain your reasoning. | | |
| A. focus: $(0, 3)$
directrix: $y = -3$ | B. focus: $(0, -5)$
directrix: $y = 5$ | C. focus: $(0, -10)$
directrix: $y = 10$ |

In Exercises 8–10, identify the focus, directrix, and axis of symmetry of the parabola. Graph the equation.

8. $y = \frac{1}{12}x^2$ 9. $y = -\frac{1}{16}x^2$ 10. $x = \frac{1}{8}y^2$

11. The cross section (with units in inches) of a parabolic satellite dish can be modeled by the equation $y = \frac{1}{48}x^2$. How far is the receiver from the vertex of the cross section? Explain.

In Exercises 12–17, write an equation of the parabola with the given characteristics.

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| 12. focus: $(2, 0)$
directrix: $x = -2$ | 13. focus: $(-4, 0)$
directrix: $x = 4$ | 14. focus: $(0, \frac{3}{4})$
directrix: $y = -\frac{3}{4}$ |
| 15. directrix: $x = -6$
vertex: $(0, 0)$ | 16. focus: $(0, 2)$
vertex: $(0, 0)$ | 17. directrix: $x = 1$
vertex: $(0, 0)$ |

In Exercises 18–21, identify the vertex, focus, directrix, and axis of symmetry of the parabola. Describe the transformations of the graph of the standard equation with vertex $(0, 0)$ and $p = 1$.

18. $y = \frac{1}{12}(x - 1)^2 + 3$ 19. $y = -\frac{1}{8}(x + 5)^2 - 2$
 20. $x = \frac{1}{4}(y + 4)^2 + 2$ 21. $y = -\frac{1}{28}(x + 6)^2 + 10$

2.3 Practice B

In Exercises 1–6, use the Distance Formula to write an equation of the parabola.

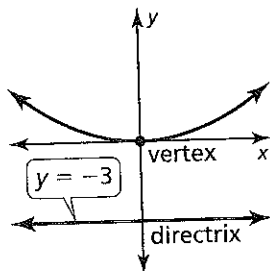
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|---|---|--|
| 1. focus: $(0, 5)$
directrix: $y = -5$ | 2. focus: $(0, -6)$
directrix: $y = 6$ | 3. focus: $(0, 4)$
directrix: $y = -4$ |
| 4. vertex: $(0, 0)$
directrix: $y = 8$ | 5. vertex: $(0, 0)$
focus: $(0, -7)$ | 6. vertex: $(0, 0)$
directrix: $y = -2$ |

In Exercises 7–12, identify the focus, directrix, and axis of symmetry of the parabola. Graph the equation.

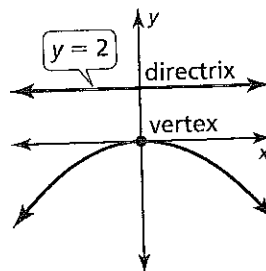
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|---------------------------|-------------------------|--------------------|
| 7. $y = -\frac{1}{32}x^2$ | 8. $x = \frac{1}{4}y^2$ | 9. $y^2 = 12x$ |
| 10. $-x^2 = 36y$ | 11. $8x^2 + 2y = 0$ | 12. $2x^2 - y = 0$ |

In Exercises 13 and 14, write an equation of the parabola shown.

13.



14.



In Exercises 15–20, write an equation of the parabola with the given characteristics.

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| 15. focus: $(0, -\frac{1}{4})$
directrix: $y = \frac{1}{4}$ | 16. focus: $(-12, 0)$
directrix: $x = 12$ | 17. focus: $(\frac{3}{5}, 0)$
directrix: $x = -\frac{3}{5}$ |
| 18. vertex: $(0, 0)$
directrix: $y = \frac{2}{3}$ | 19. vertex: $(0, 0)$
focus: $(-\frac{3}{4}, 0)$ | 20. vertex: $(0, 0)$
directrix: $x = -\frac{1}{3}$ |

In Exercises 21–24, identify the vertex, focus, directrix, and axis of symmetry of the parabola. Describe the transformations of the graph of the standard equation with vertex $(0, 0)$ and $p = 1$.

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|--------------------------------------|--------------------------------------|
| 21. $x = -\frac{1}{16}(y - 2)^2 - 3$ | 22. $y = 8(x + 2)^2 - 1$ |
| 23. $x = 5(y + 3)^2 + 6$ | 24. $y = -\frac{1}{32}(x + 1)^2 + 9$ |